

MONTHLY WEATHER REVIEW.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for April, 1903, is based on data from about 3300 stations, classified as follows:

Weather Bureau stations, regular, telegraph and mail, 160; West Indian service, cable and mail, 8; River and Flood service, 52, river and rainfall, 177, rainfall only 62; voluntary observers, domestic and foreign, 2565; total Weather Bureau Service, 2962; Canadian Meteorological Service, by telegraph and mail, 20, by mail only, 13; Meteorological Service of the Azores, by cable, 2; Meteorological Office, London, by cable, 8; Mexican Telegraph Company, by cable, 3; Army Post Hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Company, 96; Hawaiian Meteorological Service, 75; Jamaica Weather Service, 130; Costa Rican Meteorological Service, 25; The New Panama Canal Company, 5; Central Meteorological Observatory of Mexico, 20 station summaries, also printed daily bulletins and charts, based on simultaneous observations at about 40 stations; Mexican Federal Telegraph Service, printed daily charts, based on about 30 stations.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Territorial Meteorologist, Honolulu, H. I.; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Lieut. Commander W. H. H. Southerland, Hydrographer, United States Navy; H. Pittier, Director of the Physico-Geographic Institute, San José,

Costa Rica; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; W. M. Shaw, Esq., Secretary, Meteorological Office, London; Rev. Josef Algué, S. J., Director, Philippine Weather Service; and H. H. Cousins, Chemist, in charge of the Jamaica Weather Office.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is $157^{\circ} 30'$, or $10^{\text{h}} 30^{\text{m}}$ west of Greenwich. The Costa Rican standard of time is that of San José, $0^{\text{h}} 36^{\text{m}} 13^{\text{s}}$ slower than seventy-fifth meridian time, corresponding to $5^{\text{h}} 36^{\text{m}}$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

Barometric pressures, whether "station pressures" or "sea-level pressures," are now reduced to standard gravity, so that they express pressure in a standard system of absolute measures.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

Over northwestern continental Europe unusually severe weather during the first and second decades of the month culminated on the 19th and 20th with gales, snow, and low temperature over Germany, northern Russia, and the Scandinavian Peninsula.

During the first and third decades of the month several storms of moderate strength advanced from the Atlantic Ocean over the British Isles, those of the first decade passing to the north, and those of the third decade over the southern part of Great Britain.

Storms.—On the 3d and 4th, and from the 14th to the 17th, stormy weather prevailed along the middle and north Atlantic coasts of the United States, and during the latter period northeast gales of 40 to 60 miles an hour detained many vessels in north Atlantic ports. The gales of the Gulf of Mexico and the Pacific coast were not severe. On the 3d a well-defined storm, with snow and low temperature, swept from the upper Lake region over the Ohio Valley and New York, and from the 12th to 14th, and on the 29th and 30th, stormy weather prevailed in the Lake region. Ample and timely warning was given of the approach of all storms that visited the sea coasts and Great Lakes of the United States.

Cold waves.—The most important cold wave of the month set in over the northern Rocky Mountain and Plateau districts on the 27th, extended over the Northwestern States, with snow from the northern Plateau over Wyoming and Montana dur-

ing the 28th, and on the 29th covered the Middle-western and Northwestern States, with snow in Wyoming, Colorado, South Dakota, and Nebraska. At the close of the month this cold wave extended from the upper Lake region over the upper and middle Mississippi Valley and the Southwestern States, with freezing temperature to northwestern Texas, and snow in the upper Lake region, Iowa, Missouri, and Illinois.

Frosts.—The following press comments have been made regarding the warnings of frost and freezing weather that were issued during the month:

Macon, Ga., Telegraph, April 6, 1903:

As predicted, Georgia, the interior of Alabama and of Mississippi were visited by frosts yesterday morning—light, however, except in exposed places, and where the breeze was less. The warnings issued by the Weather Bureau were generally heeded, and much was done to save flowers and small garden truck of tender varieties.

Wilmington, N. C., Star, April 7, 1903:

Reports are conflicting as to the extent of the damage to truck crops in this section by reason of Saturday and Sunday's cold snap. The timely warning issued early by the Weather Bureau and its rapid dissemination by the railroads and others no doubt reduced the injury to a minimum, but the damage, of course, was something.

Newbern, N. C., Journal, April 10, 1903, editorial:

The recent freezing weather through which the truck crops of this vicinity passed and escaped destruction, suffering but little damage, is a matter of more than mere congratulation, it is a blessing for which every one is profoundly and truly thankful.